



FortiManager VM (Microsoft Hyper-V) Install Guide



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Change Log

Date	Change Description
2013-10-30	Initial release.
2014-02-06	Minor document update for v5.0.6. FortiManager VM now supports up to 12 virtual disks via the <code>execute lvm</code> CLI command.
2014-02-07	Updated the license code registration procedure to match changes to the Customer Service & Support portal.
2014-04-29	Updated instructions for adding a second virtual hard drive.
2014-12-05	Minor document update.

Introduction

FortiManager Security Management appliances allow you to centrally manage any number of Fortinet Network Security devices, from several to thousands, including FortiGate, FortiWiFi, and FortiCarrier. Network administrators can better control their network by logically grouping devices into administrative domains (ADOMs), efficiently applying policies and distributing content security/firmware updates. FortiManager is one of several versatile Network Security Management Products that provide a diversity of deployment types, growth flexibility, advanced customization through APIs and simple licensing.

This document includes the following sections:

- [FortiManager VM Overview](#)
- [FortiManager VM Deployment](#)
- [FortiManager VM Initial Configuration](#)

FortiManager documentation

The following FortiManager product documentation is available:

- [*FortiManager Administration Guide*](#)

This document describes how to set up the FortiManager system and use it to manage supported Fortinet units. It includes information on how to configure multiple Fortinet units, configuring and managing the FortiGate VPN policies, monitoring the status of the managed devices, viewing and analyzing the FortiGate logs, updating the virus and attack signatures, providing web filtering and email filter service to the licensed FortiGate units as a local FortiGuard Distribution Server (FDS), firmware revision control and updating the firmware images of the managed units.
- [*FortiManager device QuickStart Guides*](#)

These documents are included with your FortiManager system package. Use these document to install and begin working with the FortiManager system and Web-based Manager.
- [*FortiManager Online Help*](#)

You can get online help from the FortiManager Web-based Manager. FortiManager online help contains detailed procedures for using the Web-based Manager to configure and manage FortiGate units.
- [*FortiManager CLI Reference*](#)

This document describes how to use the FortiManager Command Line Interface (CLI) and contains references for all CLI commands.
- [*FortiManager Release Notes*](#)

This document describes new features and enhancements in the FortiManager system for the release, and lists resolved and known issues. This document also defines supported platforms and firmware versions.

- *FortiManager VM (VMware) Install Guide*

This document describes installing FortiManager VM in your VMware ESX or ESXi virtual environment.

- *FortiManager VM (Microsoft Hyper-V) Install Guide*

This document describes installing FortiManager VM in your Microsoft Hyper-V Server 2008 R2 or 2012 virtual environment.

FortiManager VM Overview

This section provides an overview of FortiManager VM for Microsoft Hyper-V Server 2008 R2 and 2012.

The following topics are included in this section:

- [Licensing](#)
- [System requirements](#)
- [Register FortiManager VM with Customer Service & Support](#)
- [Download the FortiManager VM software](#)
- [FortiManager VM Evaluation license](#)

Licensing

Fortinet offers the FortiManager VM in a stackable license model. This model allows you to expand your VM solution as your environment expands. When configuring your FortiManager VM, ensure to configure hardware settings as outlined in [Table 1](#) and consider future expansion. Contact your Fortinet Authorized Reseller for more information.

Table 1: FortiManager VM license information

Technical Specification	VM-BASE	VM-10-UG	VM-100-UG	VM-1000-UG	VM-5000-UG	VM-U-UG
Hypervisor Support	Microsoft Hyper-V Server 2008 R2 and 2012					
VM Form Factor	Microsoft Hyper-V Server: Virtual Hard Disk (VHD)					
HA Support	Yes					
Virtual CPU Support (Minimum / Maximum)	1 / Unlimited					
Network Interface Support (Minimum / Maximum)	1 / 4					
Memory Support (Minimum / Maximum)	2GB / Unlimited The default memory size is 2GB.					
Storage Support (Minimum / Maximum)	80GB / 16TB					
GB / Day of logs	1	2	5	10	25	50
Device Quota	100GB	200GB	1TB	4TB	8TB	16TB
Licensed Network Devices	10	+10	+100	+1000	+5000	Unlimited
Administrative Domains	10	+10	+100	+1000	+5000	Unlimited
Admin Web Portals / Maximum Portal Users	10	+10	+100	+1000	+5000	Unlimited

For more information, see the FortiManager product data sheet available on the Fortinet web site, <http://www.fortinet.com/sites/default/files/productdatasheets/FortiManager-VM.pdf>.

After placing an order for FortiManager VM, a license registration code is sent to the email address used in the order form. Use the license registration code provided to register the FortiManager VM with Fortinet Customer Service & Support at <https://support.fortinet.com>.

Upon registration, you can download the license file. You will need this file to activate your FortiManager VM. You can configure basic network settings from the CLI to complete the deployment. Once the license file is uploaded, the CLI and Web-based Manager are fully functional.

System requirements

Prior to deploying the FortiManager VM virtual appliance, Microsoft Hyper-V Server (2008 R2 or 2012) must be installed and configured. The installation instructions for FortiManager VM assume you are familiar with Microsoft Hyper-V server and terminology. For more details, refer to <http://www.microsoft.com/en-us/server-cloud/hyper-v-server/default.aspx>.

Register FortiManager VM with Customer Service & Support

To obtain the FortiManager VM license file you must first register your FortiManager VM with Fortinet Customer Service & Support.

To register your FortiManager VM:

1. Log in to the Fortinet Customer Service & Support portal using an existing support account or select *Create an Account* to create a new account.
2. In the toolbar select *Asset > Register/Renew*.

The *Registration Wizard* opens.

Figure 1: Registration Wizard

FORTINET
CUSTOMER SERVICE & SUPPORT

Home Asset Assistance Download Feedback

User: [Name] LOG OUT

Register/Renew Manage/View Products

Registration Wizard Registering Product

1 Registration Code > 2 > 3 > 4

Specify Registration Code

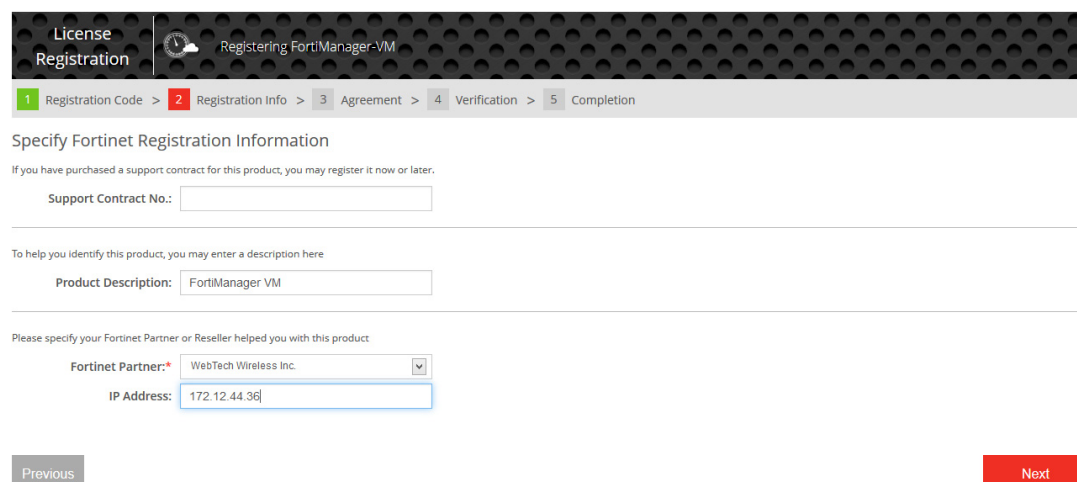
Please enter your product serial number, service contract registration code or license certificate number to start the registration:

QIVLE-T638-TV7C-BTGIB-YF4TB

Next

3. Enter the license registration code from the FortiManager VM License Certificate that was emailed to you and select *Next*. The *Registration Info* page is displayed.

Figure 2: Registration Info page



4. Enter the support contract number, product description, Fortinet Partner, and IP address.



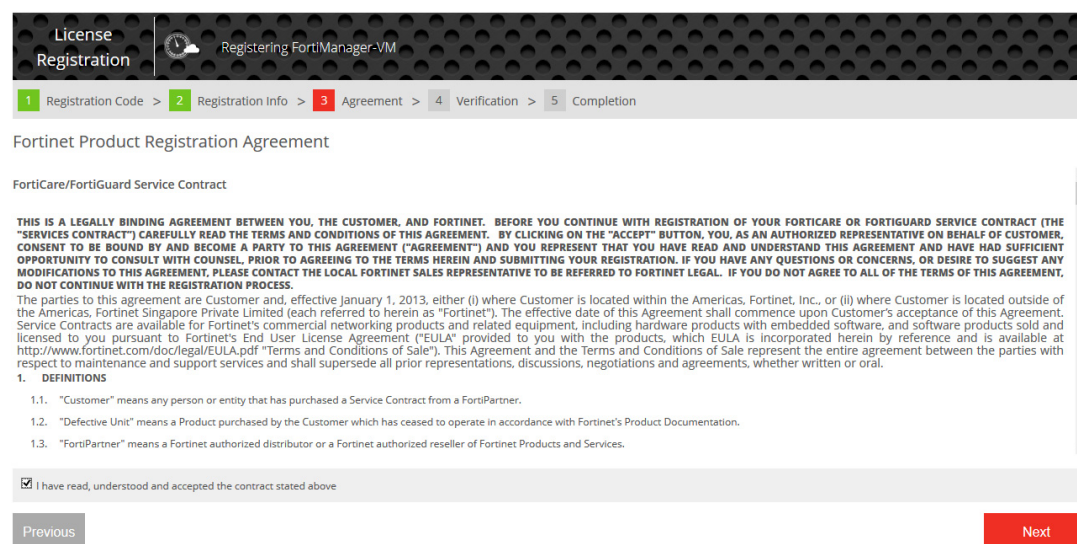
As a part of the license validation process FortiManager VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiManager VM's IP address has been changed, the FortiManager VM must be rebooted in order for the system to validate the change and operate with a valid license.



The [Customer Service & Support](#) portal currently does not support IPv6 for FortiManager VM license validation. You must specify an IPv4 address in both the support portal and the port management interface.

5. Select Next to continue. The *Fortinet Product Registration Agreement* page is displayed.

Figure 3: Fortinet Product Registration Agreement



6. Select the checkbox to indicate that you have read, understood, and accepted the service contract, and select *Next* to continue. The Verification page is displayed.

Figure 4: Verification page

License Registration | Registering FortiManager-VM

1 Registration Code > 2 Registration Info > 3 Agreement > 4 Verification > 5 Completion

Verification

Important Notice:
READ BEFORE COMPLETING THE REGISTRATION.
Please verify the entitlement preview for and its associated services.

Product Entitlement:
No Contract Term Detail information!
Entitlement calculation is based on any existing warranty or contract services plus the term of your new contract. If you have questions regarding these conditions, please open a ticket for Registration Assistance by clicking [here](#).

☒ BY ACCEPTING THIS TERMS, YOU ARE ACTIVATING THIS SUPPORT CONTRACT AND THE ENTITLEMENT PERIOD PROVIDED CAN NOT BE CHANGED. IF YOU WISH TO CONTINUE, CLICK "Confirm" BUTTON TO SUBMIT YOUR REQUEST.

Previous Confirm

7. The verification page displays the product entitlement. Select the checkbox to indicate that you accept the terms and select *Confirm* to submit the request. The *Registration Completed* page is displayed.

Figure 5: Registration Completed page

License Registration | Registering FortiManager-VM

1 Registration Code > 2 Registration Info > 3 Agreement > 4 Verification > 5 Completion

Registration Completed

Thank you for choosing Fortinet product. Your registration process has successfully completed. Please be aware that the registration information may not reflect on your product immediately, a delay (up to 4 hours) can occur.

Product Info

General

Product Model:	FortiManager-VM
Serial Number:	FMG-VM0A13000079
License Number:	FMVM0005274
Supported Devices:	10
Supported FortiClients:	2500
Registration Date:	2014-02-07
Description:	FortiManager VM
Partner:	WebTech Wireless Inc.
IP Address:	172.12.44.36
License File:	License File Download

Support Coverage

No service coverage!

Registered License(s)

License Type	License Number	Key	Registration Date
FortiManagerVM	FMVM0005274	N/A	2014-02-07

FortiManager VM base license for 10 devices/domains, 1 GB/Day log and 100 GB device quota.

Register More Finish

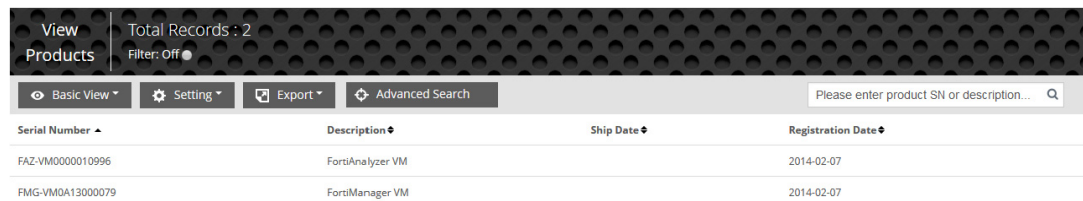
8. In the *Registration Completed* page you can download the FortiManager VM license file. Select the *License File Download* link. You will be prompted to save the license file (.lic) to your management computer. See [“Upload the FortiManager VM license file” on page 32](#) for instructions on uploading the license file to your FortiManager VM via the Web-based Manager.

To edit the FortiManager VM IP address:

1. In the toolbar select *Asset > Manage/View Products*.

The *View Products* page opens.

Figure 6: View Products page

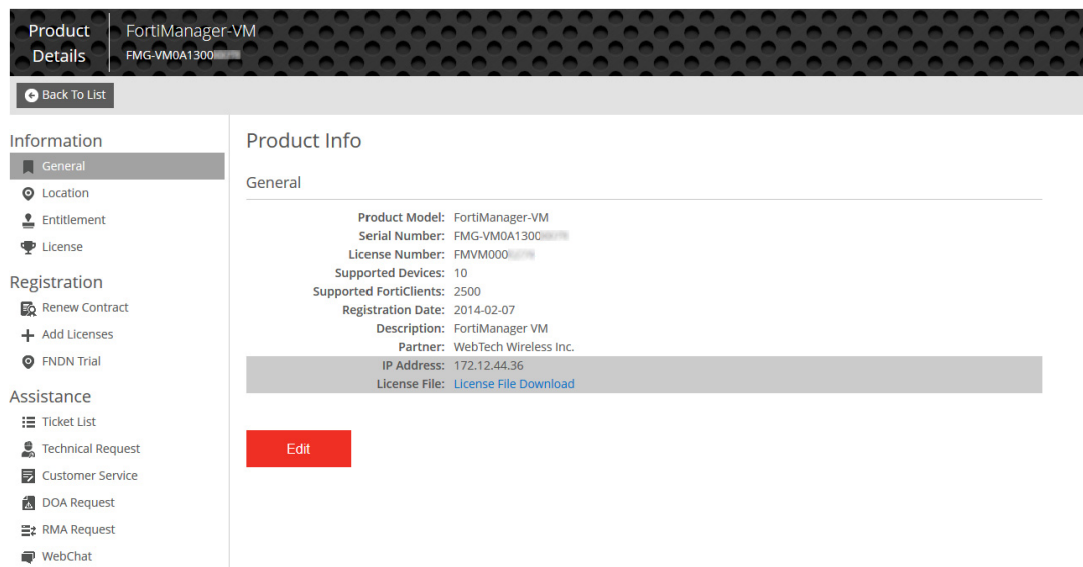


Serial Number	Description	Ship Date	Registration Date
FAZ-VM0000010996	FortiAnalyzer VM		2014-02-07
FMG-VM0A13000079	FortiManager VM		2014-02-07

2. Select the FortiManager VM serial number.

The *Product Details* page opens.

Figure 7: Product Details page



Product Details FortiManager-VM
FMG-VM0A13000079

[Back To List](#)

Information

- General
- Location
- Entitlement
- License

Registration

- Renew Contract
- Add Licenses
- FNDN Trial

Assistance

- Ticket List
- Technical Request
- Customer Service
- DOA Request
- RMA Request
- WebChat

Product Info

General

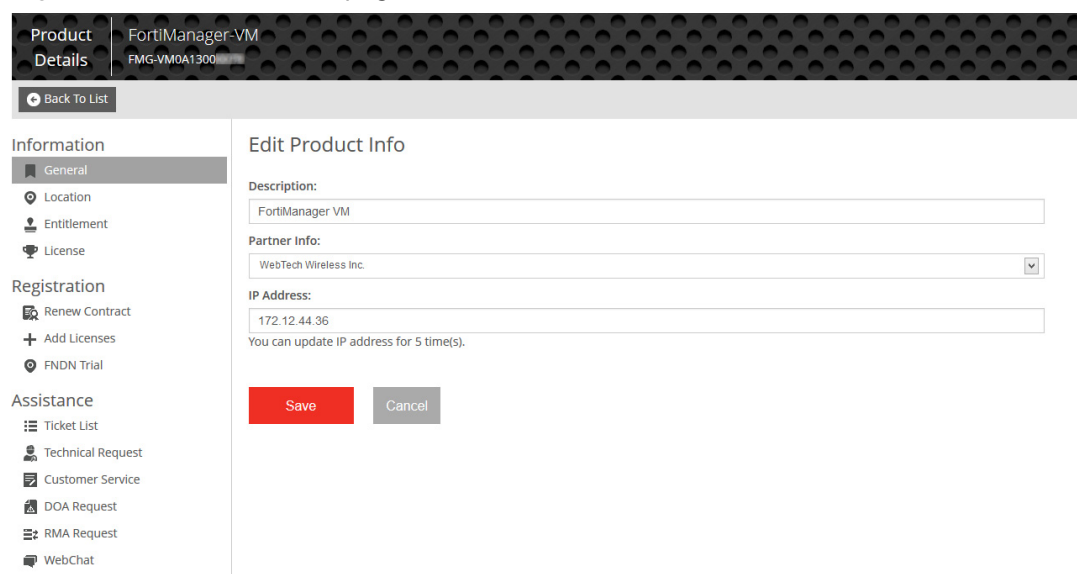
Product Model: FortiManager-VM
Serial Number: FMG-VM0A13000079
License Number: FMVM00000000
Supported Devices: 10
Supported FortiClients: 2500
Registration Date: 2014-02-07
Description: FortiManager VM
Partner: WebTech Wireless Inc.
IP Address: 172.12.44.36
License File: [License File Download](#)

[Edit](#)

3. Select *Edit* to change the description, partner information, and IP address of your FortiManager VM.

The *Edit Product Info* page opens.

Figure 8: Edit Product Info page



4. Enter the new IP address and select Save.



You can change the IP address five (5) times on a regular FortiManager VM license. There is no restriction on a full evaluation license.

5. Select the *License File Download* link. You will be prompted to save the license file (.lic) to your management computer. See [“Upload the FortiManager VM license file” on page 32](#) for instructions on uploading the license file to your FortiManager VM via the Web-based Manager.

Download the FortiManager VM software

Fortinet provides the FortiManager VM software for Hyper-V environments in two formats:

- FMG_VM64_HV-v500-build0xxx-FORTINET.out: Download this firmware image to upgrade your existing FortiManager VM installation.
- FMG_VM64_HV-v500-build0xxx-FORTINET.out.hyperv.zip: Download this package for a new FortiManager VM installation.

The FMG_VM64_HV-v500-build0xxx-FORTINET.out.hyperv.zip file folder contains the following file:

- fmg.vhd: Virtual hard disk (VHD) format file.

Firmware images in the [Customer Service & Support](#) portal directories are organized by firmware version, major release, and patch release. FortiManager VM image for Microsoft Hyper-V are identified by the `_HV` in the image name. The firmware images in the directories follow a specific naming convention and each firmware image is specific to the device model. For example, the `FMG_VM64_HV-v500-build0618-FORTINET.out.hyperv.zip` image found in the `v5.2.0` directory is specific to the FortiManager VM Microsoft Hyper-V server environment.



You can download the [FortiManager Release Notes](#), and MIB file in this directory. The Fortinet Core MIB file is located in the main FortiManager v5.00 directory.

To download the FortiManager VM .hyperv.zip package:

1. In the toolbar, select *Download > Firmware Images*.

The *Firmware Images* page opens.

Figure 9: Firmware images page

Welcome to the Firmware Images download center for Fortinet's extensive line of security solutions.

Select Product

FortiManager

Release Notes Download

Downloading via FTP is not secure, HTTPS is recommended. Please always verify your image by checksum code before installation. In case your browser has problem to show below content, click [here](#).

Image File Path

/ FortiManager/

Image Folders/Files



















Name	Size (KB)	Date Created	Date Modified
v2.50	Directory	2003-12-19 14:12:52	2003-12-19 14:12:52
v2.80	Directory	2005-08-30 05:08:20	2005-08-30 05:08:20
v3.00	Directory	2010-04-16 17:04:37	2010-04-16 17:04:37
v4.00	Directory	2013-02-20 18:02:25	2013-02-20 18:02:25
v5.00	Directory	2014-04-04 15:04:01	2014-04-04 15:04:01

2. Select *FortiManager* from the drop-down list and select *Download*.
3. Browse to the appropriate directory for the version that you would like to download.

Figure 10:Directory example

Image Folders/Files

[Up to higher level directory](#)

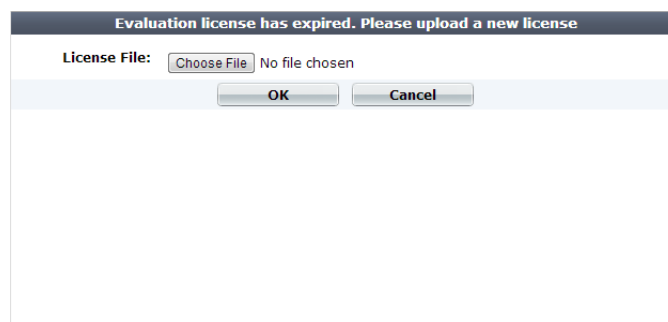
Name	Size (KB)	Date Created	Date Modified			
 FMG_1000C-v500-build0618-FORTINET.out	59,132	2014-08-25 14:08:45	2014-08-25 14:08:45	HTTPS	FTP	Checksum
 FMG_1000D-v500-build0618-FORTINET.out	59,090	2014-08-25 14:08:50	2014-08-25 14:08:50	HTTPS	FTP	Checksum
 FMG_100C-v500-build0618-FORTINET.out	55,935	2014-08-25 14:08:29	2014-08-25 14:08:29	HTTPS	FTP	Checksum
 FMG_200D-v500-build0618-FORTINET.out	55,238	2014-08-25 14:08:34	2014-08-25 14:08:34	HTTPS	FTP	Checksum
 FMG_3000C-v500-build0618-FORTINET.out	59,686	2014-08-25 14:08:54	2014-08-25 14:08:54	HTTPS	FTP	Checksum
 FMG_300D-v500-build0618-FORTINET.out	57,399	2014-08-25 14:08:39	2014-08-25 14:08:39	HTTPS	FTP	Checksum
 FMG_4000C-v500-build0618-FORTINET.out	59,486	2014-08-25 14:08:59	2014-08-25 14:08:59	HTTPS	FTP	Checksum
 FMG_4000E-v500-build0618-FORTINET.out	59,433	2014-08-25 14:08:02	2014-08-25 14:08:02	HTTPS	FTP	Checksum
 FMG_400C-v500-build0618-FORTINET.out	57,050	2014-08-25 14:08:42	2014-08-25 14:08:42	HTTPS	FTP	Checksum
 FMG_VM32-v500-build0618-FORTINET.out	57,972	2014-08-25 14:08:05	2014-08-25 14:08:05	HTTPS	FTP	Checksum
 FMG_VM32-v500-build0618-FORTINET.out.ovf.zip	56,566	2014-08-25 14:08:19	2014-08-25 14:08:19	HTTPS	FTP	Checksum
 FMG_VM64_HV-v500-build0618-FORTINET.out	59,529	2014-08-25 14:08:12	2014-08-25 14:08:12	HTTPS	FTP	Checksum
 FMG_VM64_HV-v500-build0618-FORTINET.out.hyperv.zip	58,145	2014-08-25 14:08:25	2014-08-25 14:08:25	HTTPS	FTP	Checksum
 FMG_VM64-v500-build0618-FORTINET.out	59,672	2014-08-25 14:08:09	2014-08-25 14:08:09	HTTPS	FTP	Checksum
 FMG_VM64-v500-build0618-FORTINET.out.ovf.zip	58,266	2014-08-25 14:08:22	2014-08-25 14:08:22	HTTPS	FTP	Checksum
 fortimanager-v5.2.0-release-notes.pdf	227	2014-09-23 16:09:08	2014-09-23 16:09:08	HTTPS	FTP	Checksum
 fortimanager-v5.2.0-upgrade-guide.pdf	840	2014-09-23 16:09:08	2014-09-23 16:09:08	HTTPS	FTP	Checksum
 FORTINET-FORTIMANAGER-FORTIANALYZER-MIB.mib	17	2014-08-25 15:08:38	2014-08-25 15:08:38	HTTPS	FTP	Checksum

4. Download the `.hyperv.zip` file and *FortiManager Release Notes*, and save these files to your management computer.
5. Select the `.hyperv.zip` file on your management computer and extract the files to a new file folder. See “[Create the FortiManager VM virtual machine](#)” on page 16 for information on deploying the VHD file to your Hyper-V server environment.

FortiManager VM Evaluation license

FortiManager VM includes a free 15-day trial license that includes all features. No activation is required for the built-in evaluation license. The trial period begins the first time you start FortiManager VM. Once the trial expires, functionality is disabled until you upload a license file.

Figure 11:Expired license dialog box



Technical support is not included with the 15-day evaluation.



Contact your Fortinet Reseller to request a full evaluation (60-days) FortiManager VM license.

FortiManager VM Deployment

Once you have downloaded the `.hyperv.zip` file and extracted the package contents to a folder on your Microsoft server, you can deploy the VHD package to your Microsoft Hyper-V environment.

The following topics are included in this section:

- Create the FortiManager VM virtual machine
- Configure FortiManager VM hardware settings
- Start the FortiManager VM

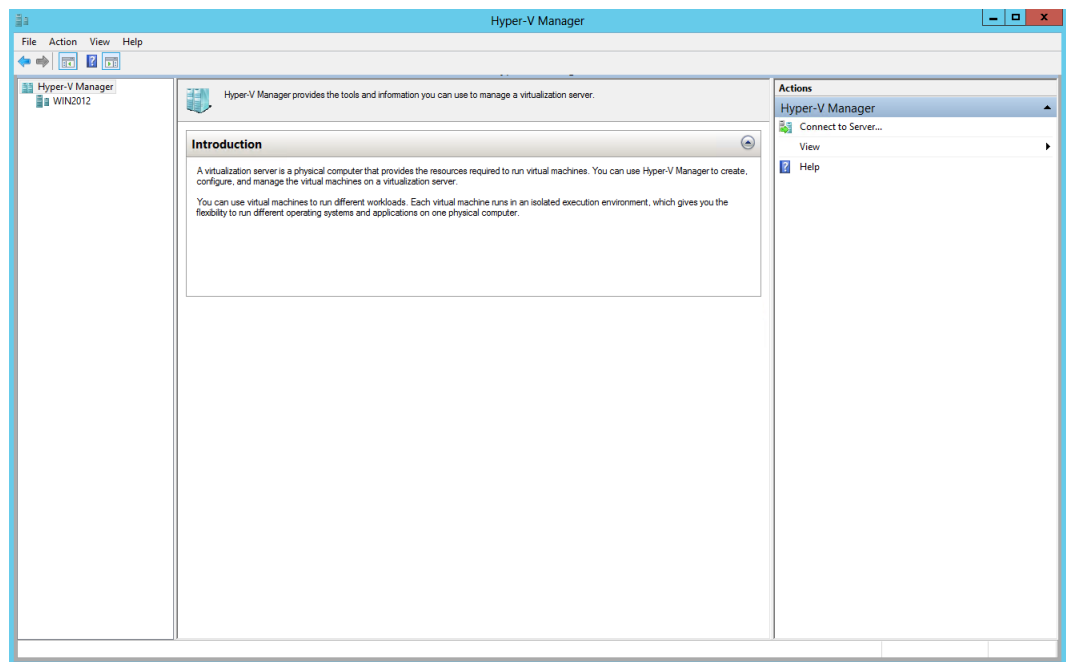
Create the FortiManager VM virtual machine

To create the FortiManager VM virtual machine:

1. Launch the Hyper-V Manager in your Microsoft server.

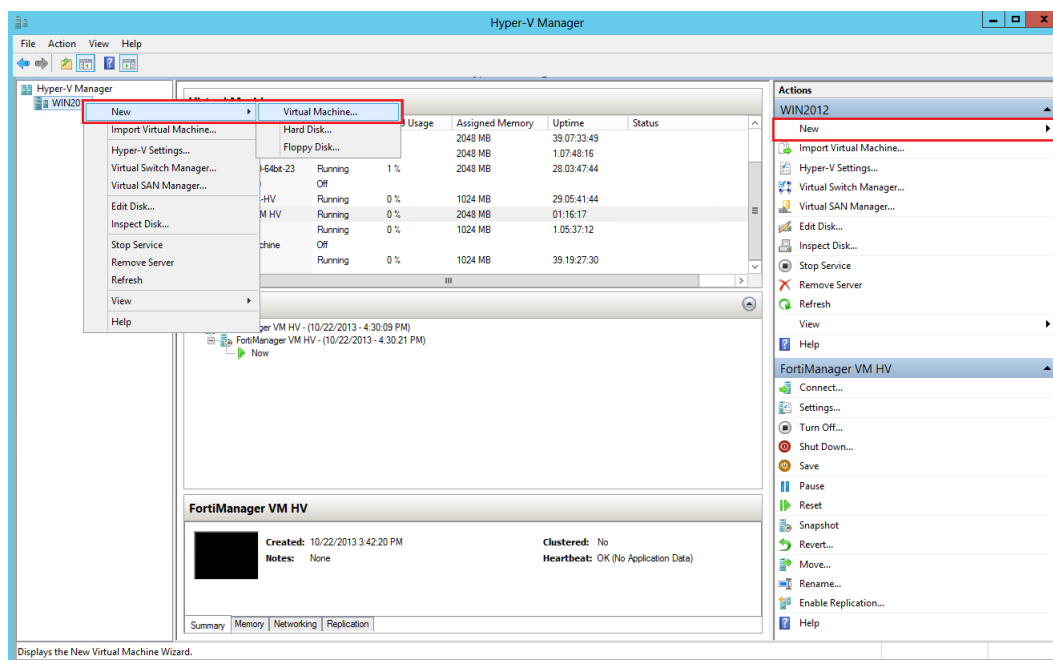
The *Hyper-V Manager* home page opens.

Figure 12:Hyper-V Manager home page



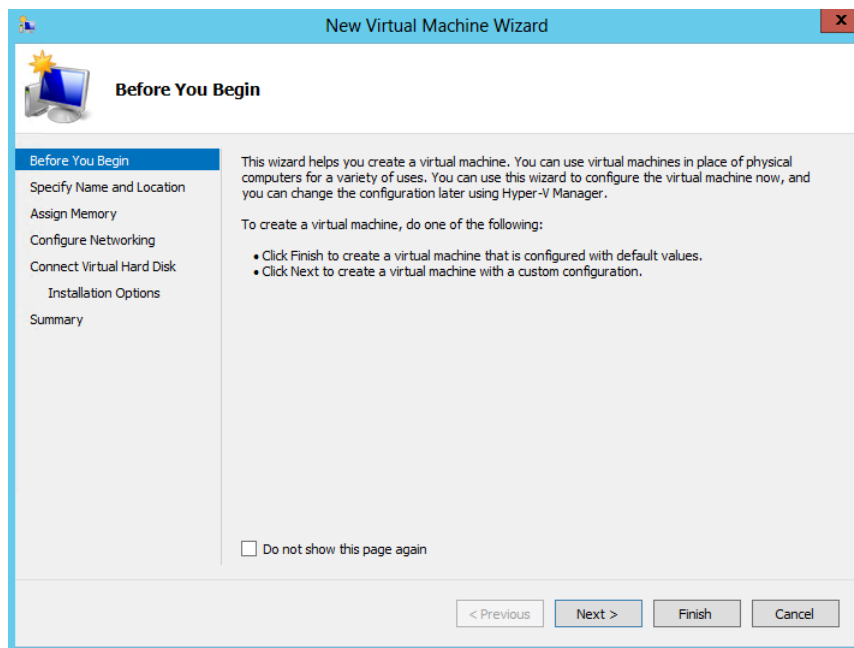
2. Select the server in the right-tree menu. The server details page is displayed.

Figure 13:Server page



3. Right-click the server and select **New** and select *Virtual Machine* from the menu. Optionally, in the *Actions* menu, select **New** and select *Virtual Machine* from the menu. The *New Virtual Machine Wizard* opens.

Figure 14:New Virtual Machine Wizard



4. Select **Next** to create a virtual machine with a custom configuration. The *Specify Name and Location* page is displayed.

Figure 15:Specify Name and Location page

The screenshot shows the 'Specify Name and Location' page of the 'New Virtual Machine Wizard'. The left sidebar contains a list of steps: 'Before You Begin', 'Specify Name and Location' (highlighted), 'Assign Memory', 'Configure Networking', 'Connect Virtual Hard Disk', 'Installation Options', and 'Summary'. The main area has the title 'Specify Name and Location' and a sub-header 'Choose a name and location for this virtual machine.' Below this, it states: 'The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.' There is a text input field for 'Name' containing 'FortiManager VM-HV'. Below that, it says: 'You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.' There is a checkbox labeled 'Store the virtual machine in a different location' which is currently unchecked. Below the checkbox is a text input field for 'Location' containing 'C:\ProgramData\Microsoft\Windows\Hyper-V\' and a 'Browse...' button. A warning icon and text state: 'If you plan to take snapshots of this virtual machine, select a location that has enough free space. Snapshots include virtual machine data and may require a large amount of space.' At the bottom right are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

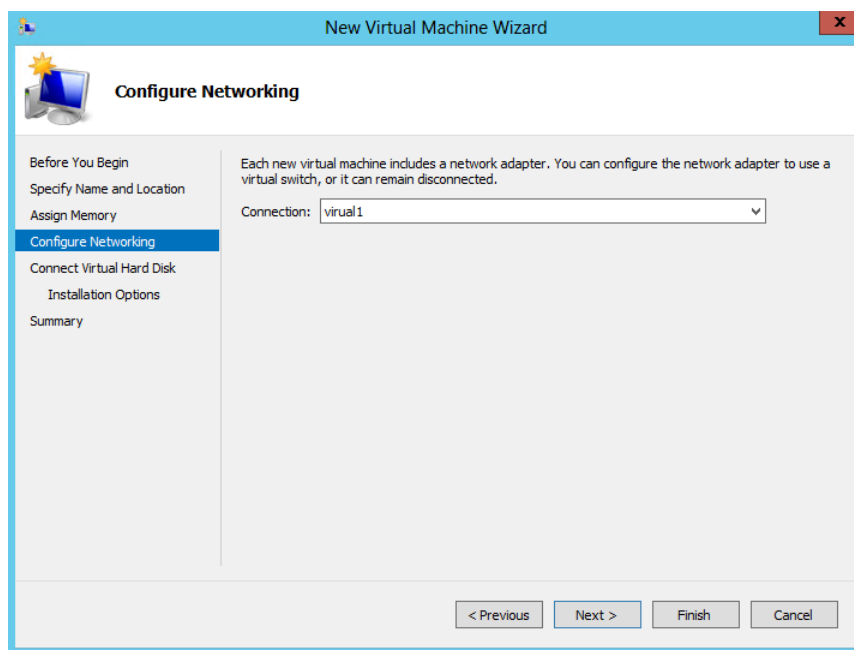
5. Enter a name for this virtual machine. The name is displayed in the Hyper-V Manager. Select *Next* to continue. The *Assign Memory* page is displayed.

Figure 16:Assign Memory page

The screenshot shows the 'Assign Memory' page of the 'New Virtual Machine Wizard'. The left sidebar contains a list of steps: 'Before You Begin', 'Specify Name and Location', 'Assign Memory' (highlighted), 'Configure Networking', 'Connect Virtual Hard Disk', 'Installation Options', and 'Summary'. The main area has the title 'Assign Memory' and a sub-header 'Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 8 MB through 14100 MB. To improve performance, specify more than the minimum amount recommended for the operating system.' Below this, it says: 'Startup memory: 2048 MB'. There is a checkbox labeled 'Use Dynamic Memory for this virtual machine' which is currently unchecked. Below the checkbox is an information icon and text: 'When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.' At the bottom right are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

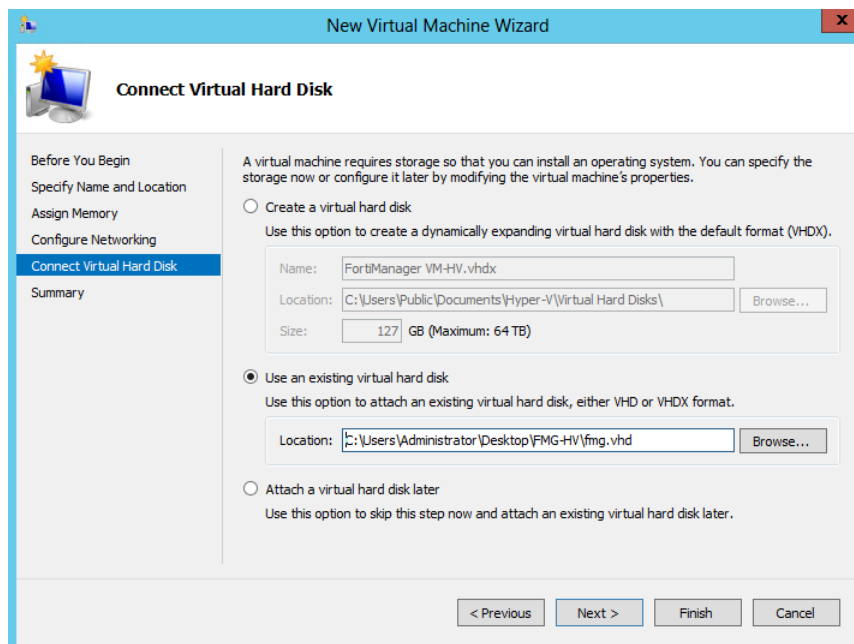
6. Specify the amount of memory to allocate to this virtual machine. The default memory for FortiManager VM is 2GB (2048MB). Select *Next* to continue. The *Configure Networking* page is displayed.

Figure 17:Configure Networking page



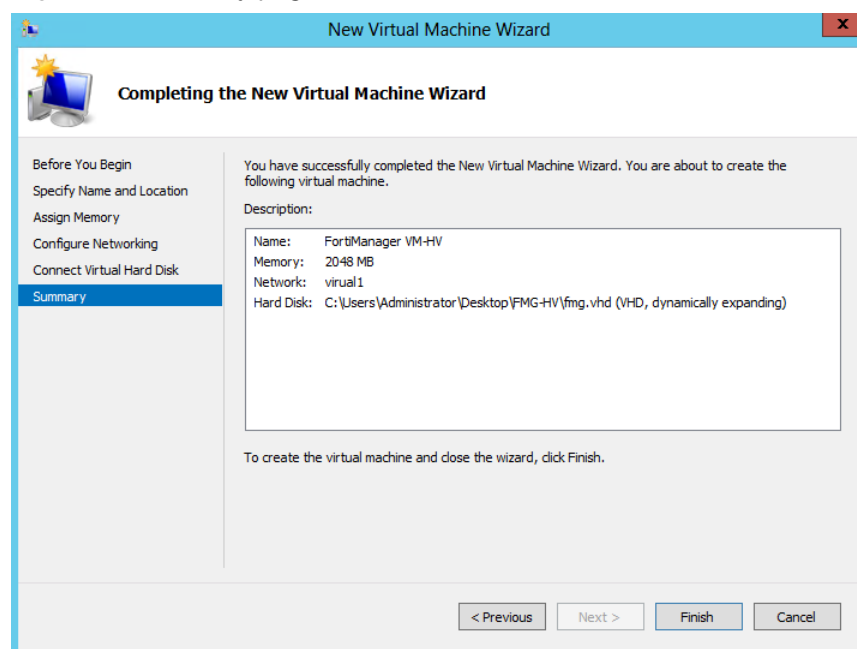
7. Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected. FortiManager VM requires four network adapters. You must configure network adapters in the *Settings* page. Select *Next* to continue. The *Connect Virtual Hard Disk* page is displayed.

Figure 18:Connect Virtual Hard Disk page



8. Select to use an existing virtual hard disk and browse for the `fmv.vhd` file that you downloaded from the [Fortinet Customer Service & Support portal](#). Select *Next* to continue. The *Summary* page is displayed.

Figure 19:Summary page



9. To create the virtual machine and close the wizard, select *Finish*.

Configure FortiManager VM hardware settings

Before powering on your FortiManager VM you must configure the virtual CPU, and create network adapters and virtual disk configuration to match your FortiManager VM license. See [“FortiManager VM license information” on page 7](#) for FortiManager VM license information.

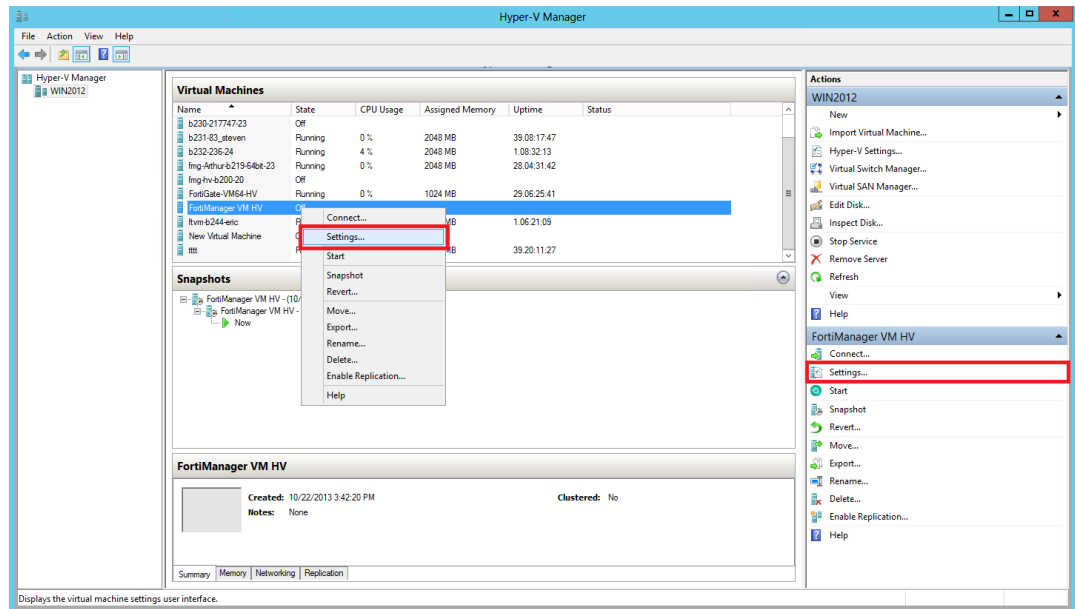


It is recommended to configure the FortiManager VM hardware settings prior to powering on the FortiManager VM.

To configure settings for FortiManager VM on the server:

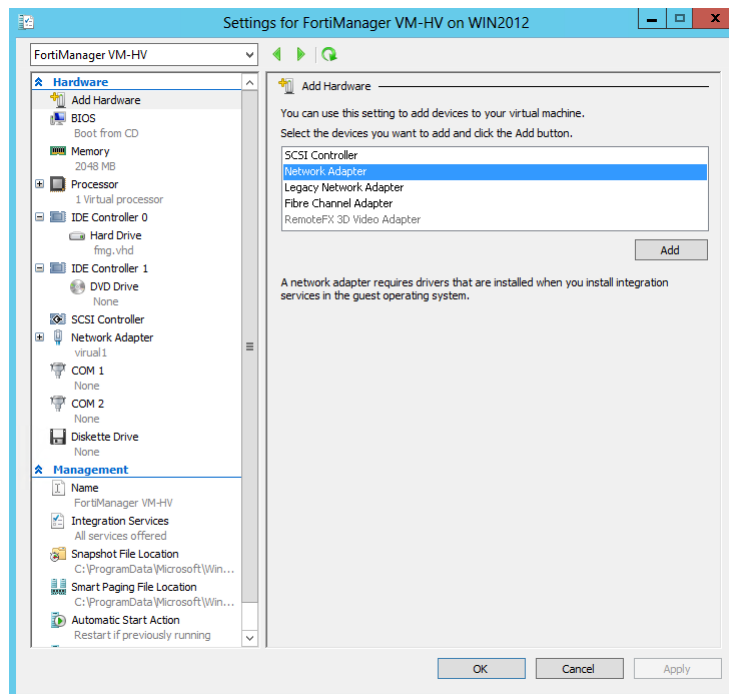
1. In the Hyper-V Manager, locate the name of the virtual machine, right-click the entry, and select *Settings* from the menu. Optionally, you can select the virtual machine and select *Settings* in the *Actions* menu.

Figure 20:Hyper-V Manager



The *Settings* page is displayed.

Figure 21:Settings page



2. Configure virtual processors, network adapters, and virtual hard drive settings.
3. Select *Apply* to save the settings and then select *OK* to close the settings page.

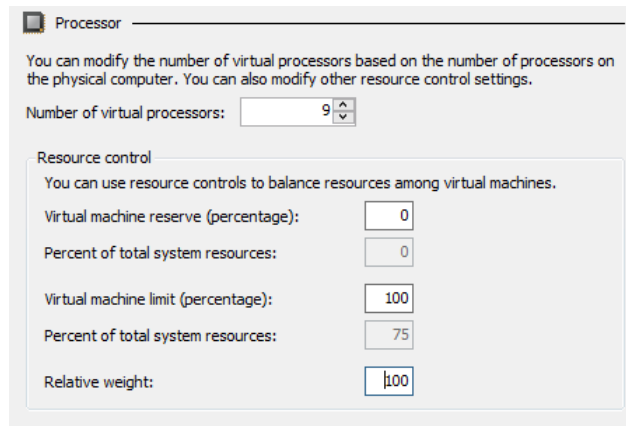
FortiManager VM virtual processors

You must configure FortiManager VM virtual processors in the server settings page. The number of processors is dependent on your server environment.

Configure FortiManager VM virtual processors:

1. In the *Settings* page, select *Processor* from the *Hardware* menu.
The *Processor* page is displayed.

Figure 22:Processor page



The screenshot shows the 'Processor' configuration page in FortiManager. At the top, there is a title bar with a processor icon and the word 'Processor'. Below the title bar, a text box explains: 'You can modify the number of virtual processors based on the number of processors on the physical computer. You can also modify other resource control settings.' Below this text, there is a label 'Number of virtual processors:' followed by a text input field containing the number '9' and a small up/down arrow icon. Below this, there is a section titled 'Resource control' with a sub-header 'You can use resource controls to balance resources among virtual machines.' This section contains five rows of settings, each with a label and a text input field: 'Virtual machine reserve (percentage):' with '0', 'Percent of total system resources:' with '0', 'Virtual machine limit (percentage):' with '100', 'Percent of total system resources:' with '75', and 'Relative weight:' with '100'.

Setting	Value
Number of virtual processors	9
Virtual machine reserve (percentage)	0
Percent of total system resources	0
Virtual machine limit (percentage)	100
Percent of total system resources	75
Relative weight	100

2. Configure the number of virtual processors for the FortiManager VM virtual machine.
Optionally, you can use resource controls to balance resources among virtual machines.
3. Select *Apply* to save the settings.

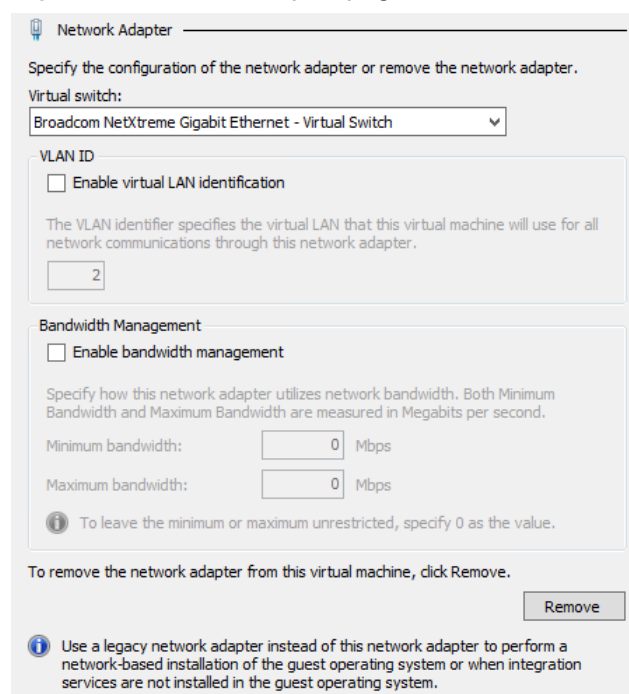
FortiManager VM network adapters

You must configure FortiManager VM network adapters in the server settings page. FortiManager VM supports four network adapters.

Configure FortiManager VM network adapters:

1. In the *Settings* page, select *Add Hardware* from the *Hardware* menu, select *Network Adapter* in the device list, and select the *Add* button.
The *Network Adapter* page is displayed.

Figure 23:Network Adapter page



The screenshot shows the 'Network Adapter' configuration page. At the top, it says 'Specify the configuration of the network adapter or remove the network adapter.' Below this is a 'Virtual switch:' dropdown menu set to 'Broadcom NetXtreme Gigabit Ethernet - Virtual Switch'. Under 'VLAN ID', there is a checkbox for 'Enable virtual LAN identification' which is unchecked, and a text box containing the number '2'. Below that is a 'Bandwidth Management' section with a checkbox for 'Enable bandwidth management' which is also unchecked. It includes instructions to specify minimum and maximum bandwidth in Mbps, with input boxes set to '0'. A note at the bottom of this section says 'To leave the minimum or maximum unrestricted, specify 0 as the value.' At the very bottom, there is a 'Remove' button and a note: 'To remove the network adapter from this virtual machine, click Remove.' and a tip: 'Use a legacy network adapter instead of this network adapter to perform a network-based installation of the guest operating system or when integration services are not installed in the guest operating system.'

2. You must manually configure four network adapters for FortiManager VM in the settings page. For each network adapter, select the virtual switch from the drop-down list.
3. Select *Apply* to save the settings.

FortiManager VM virtual hard disk

You must configure the FortiManager VM virtual hard disk in the server settings page.



FortiManager VM requires at least two virtual hard disks. Before powering on the FortiManager VM, you need to add at least one more virtual hard disk. The default hard drive, `fmg.vhd`, contains the operating system. The second hard drive will be used for logs.



If you know your environment will expand in the future, it is recommended to add hard disks larger than the 200GB FortiManager VM base license requirement. This will allow your environment to be expanded as required while not taking up more space in the SAN than is needed.



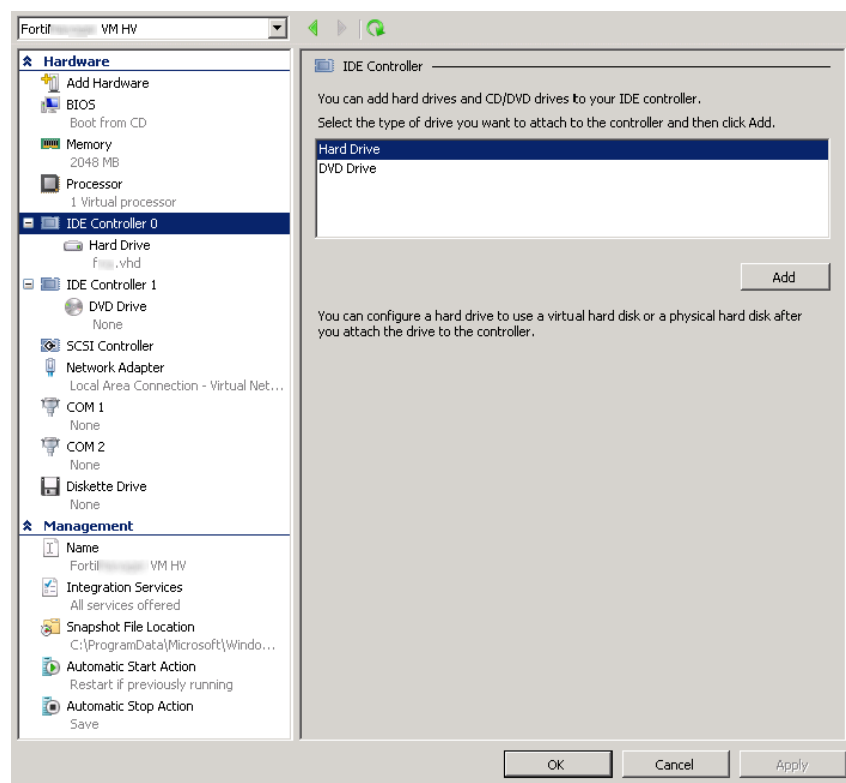
FortiManager VM allows for twelve virtual log disks to be added to a deployed instance. When adding additional hard disks to your FortiManager VM use the following CLI command to extend the LVM logical volume:

```
execute lvm start
execute lvm extend <arg ..>
```

Create a FortiManager VM virtual hard drive:

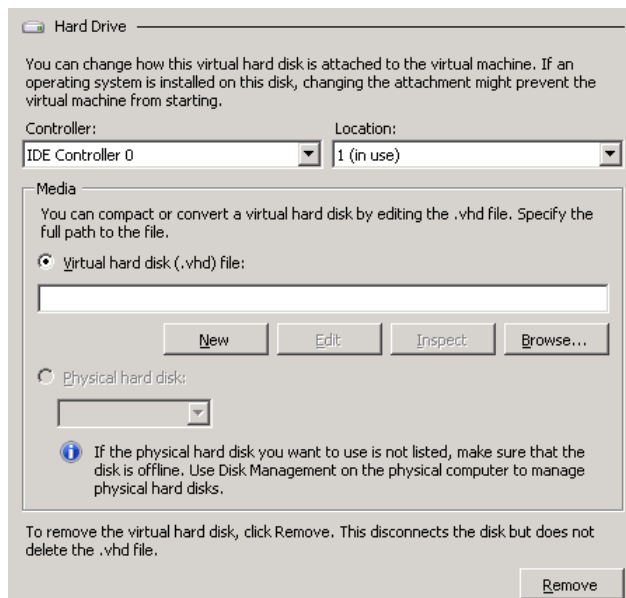
1. In the *Settings* page, select *IDE Controller 0* from the *Hardware* menu.

Figure 24: Settings page



2. Select the type of drive you want to attach to the controller and then select *Add*. The *Hard Drive* page is displayed.

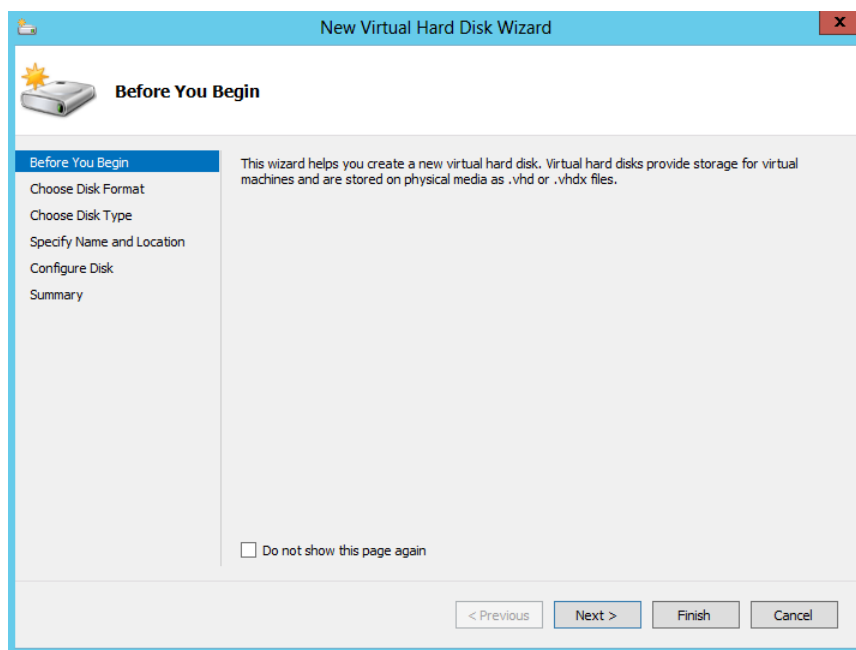
Figure 25:Hard Drive page



3. Select **New** to create a new virtual hard disk.

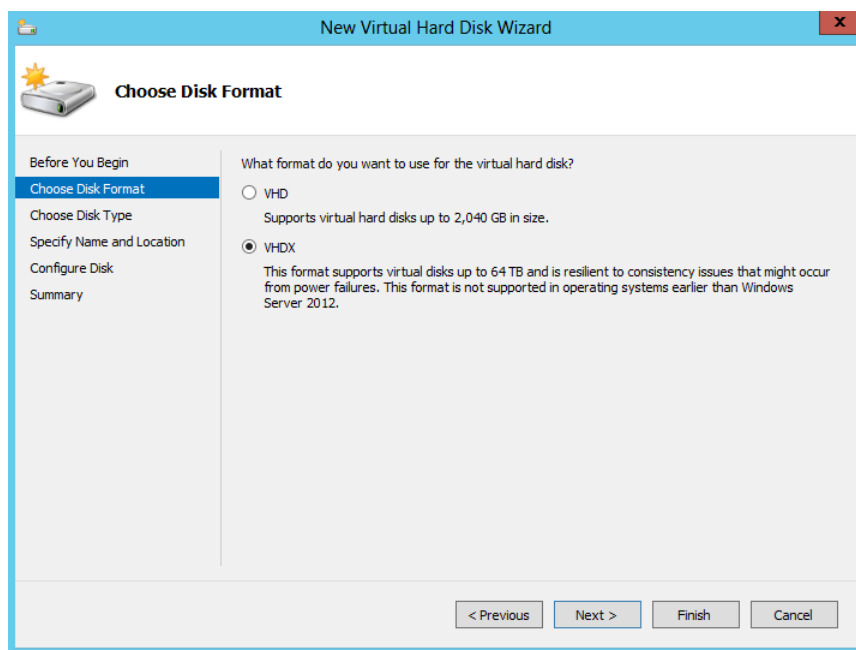
The *New Virtual Hard Disk Wizard* opens.

Figure 26:New Virtual Hard Disk Wizard



4. This wizard helps you to create a new virtual hard disk.
Select **Next** to continue. The *Choose Disk Format* page opens.

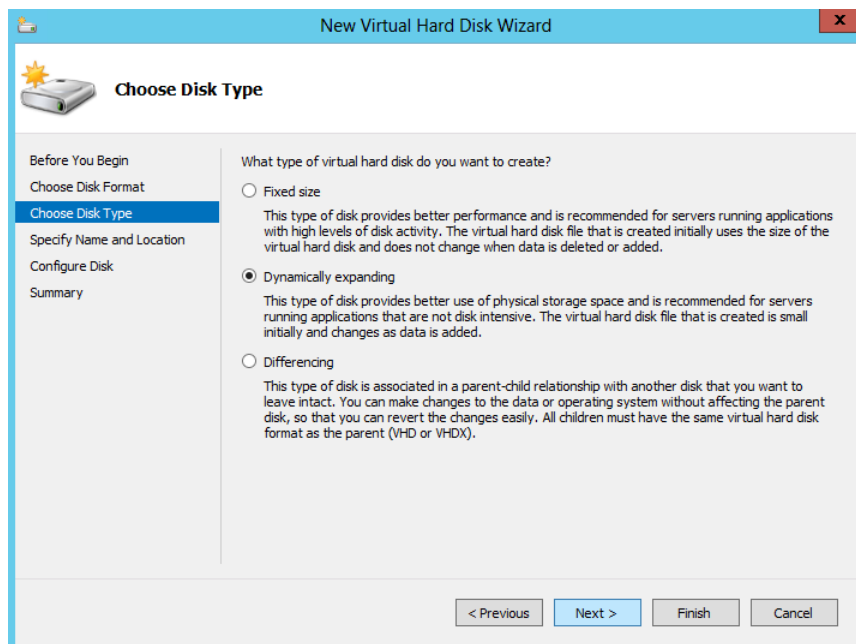
Figure 27:Choose Disk Format page



5. Select to use VHDX format virtual hard disks. This format supports virtual disks up to 64TB and is resilient to consistency issues that might occur from power failures. This format is not supported in operating systems earlier that Windows Server 2012.

Select *Next* to continue. The *Choose Disk Type* page opens.

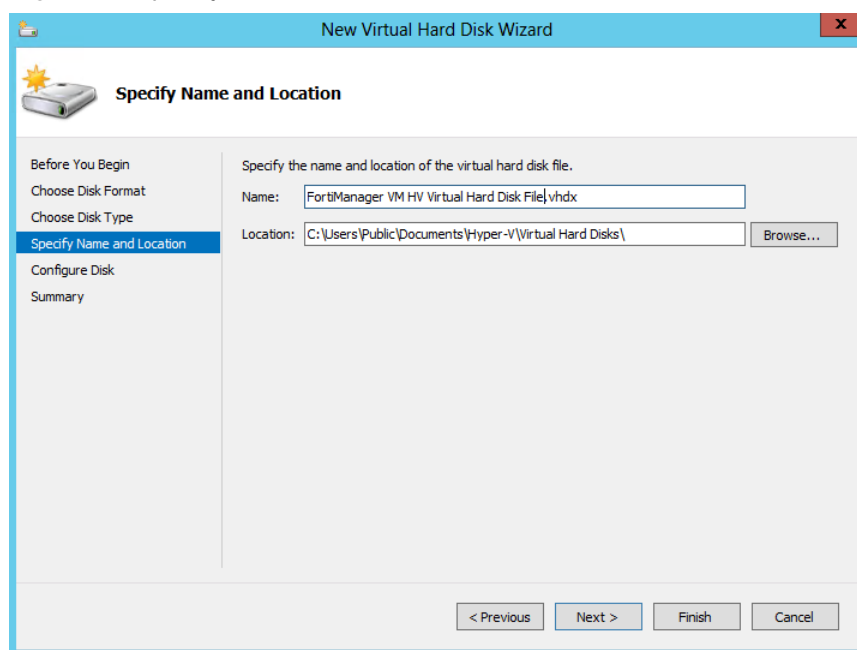
Figure 28:Choose Disk Type page



6. Select the type of virtual disk you want to use. Select one of the following disk types:
- Fixed size: This type of disk provides better performance and is recommended for servers running applications with high levels of disk activity. The virtual hard disk file that is created initially uses the size of the virtual hard disk and does not change when data is deleted or added.
 - Dynamic expanding: This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The virtual disk file that is created is small initially and changes as data is added.
 - Differencing: This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to the data or operating system without affecting the parent disk, so that you can revert the changes easily. All children must have the same virtual hard disk format as the parent (VHD or VHDX).

Select *Next* to continue. The *Specify Name and Location* page opens.

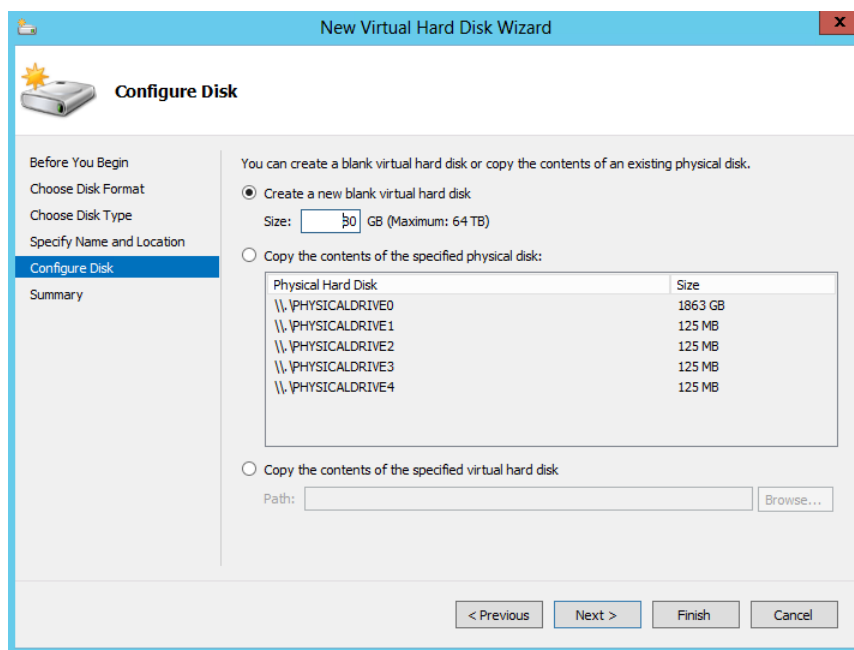
Figure 29:Specify Name and Location



The screenshot shows the 'New Virtual Hard Disk Wizard' window with the title bar 'New Virtual Hard Disk Wizard'. The main window has a blue header with a sun icon and the title 'Specify Name and Location'. On the left, there is a navigation pane with the following steps: 'Before You Begin', 'Choose Disk Format', 'Choose Disk Type', 'Specify Name and Location' (which is highlighted with a blue bar), 'Configure Disk', and 'Summary'. The main area of the window contains the text 'Specify the name and location of the virtual hard disk file.' Below this, there are two input fields: 'Name:' with the text 'FortiManager VM HV Virtual Hard Disk File.vhdx' and 'Location:' with the text 'C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\'. To the right of the 'Location' field is a 'Browse...' button. At the bottom of the window, there are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

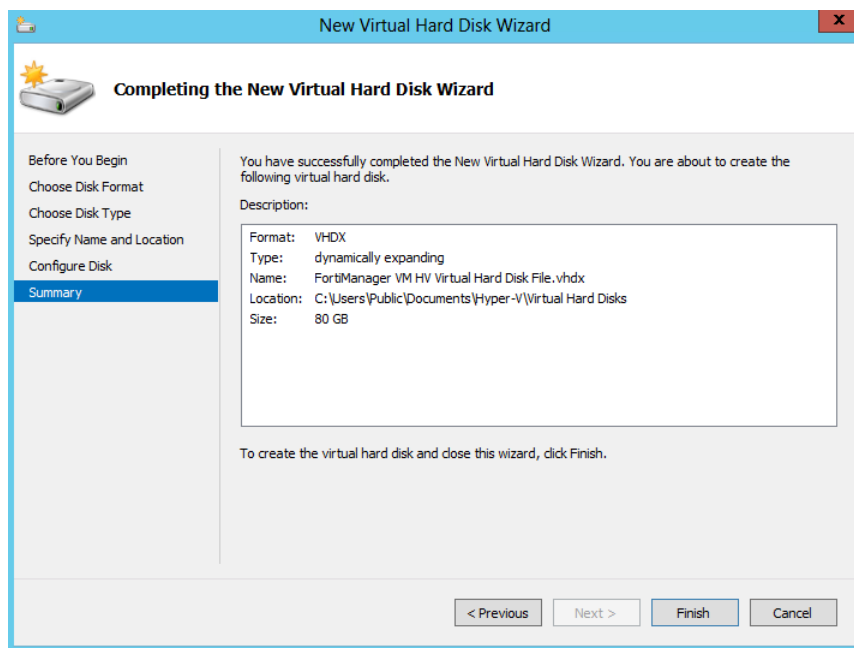
7. Specify the name and location of the virtual hard disk file. Use the *Browse* button to select a specific file folder on your server.
- Select *Next* to continue. The *Configure Disk* page opens.

Figure 30:Configure Disk page



8. Select to create a new blank virtual hard disk and enter the size of the disk in GB. The maximum size is dependent on your server environment.
Select *Next* to continue. The *Summary* page opens.

Figure 31:Summary page

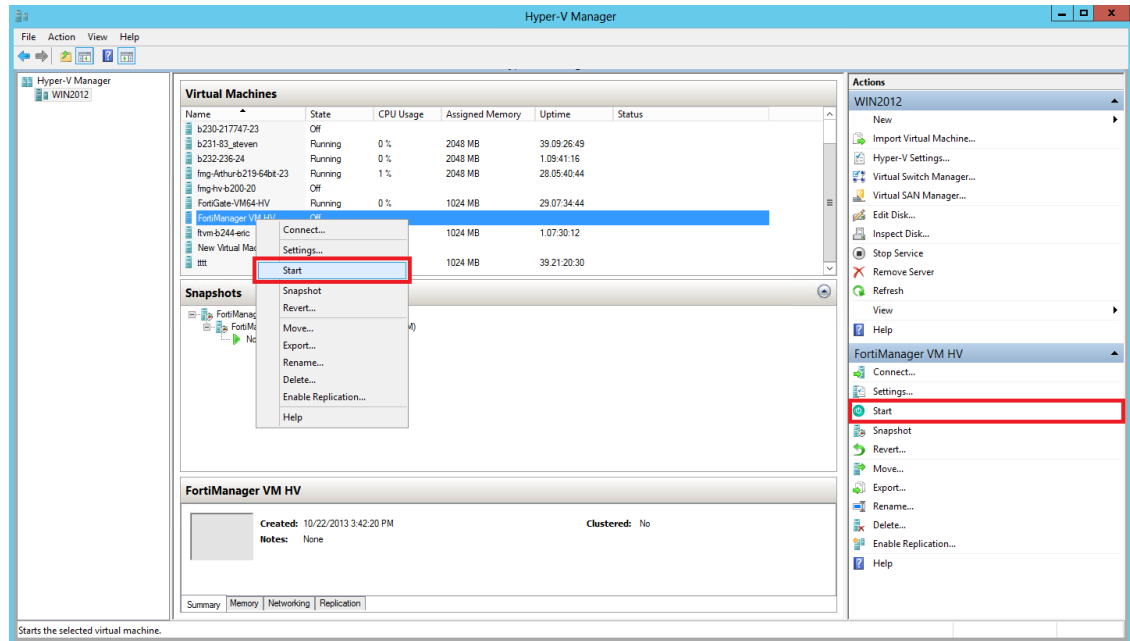


9. The summary page provides details of the virtual hard disk. Select *Finish* to create the virtual hard disk.
10. Select *Apply* to save the settings and select *OK* to exit the settings page.

Start the FortiManager VM

You can now proceed to power on your FortiManager VM. Select the name of the FortiManager VM in the list of virtual machines, right-click, and select *Start* in the menu. Optionally, you can select the name of the FortiManager VM in the list of virtual machines and select *Start* in the *Actions* menu.

Figure 32:Start the FortiManager VM virtual machine



FortiManager VM Initial Configuration

Before you can connect to the FortiManager VM Web-based Manager you must configure basic configuration via console in Microsoft Hyper-V Server. Once configured, you can connect to the FortiManager VM Web-based Manager and upload the FortiManager VM license file that you downloaded from the [Customer Service & Support](#) portal.

The following topics are included in this section:

- FortiManager VM console access
- Connect to the FortiManager VM Web-based Manager
- Upload the FortiManager VM license file
- Configure your FortiManager VM

FortiManager VM console access

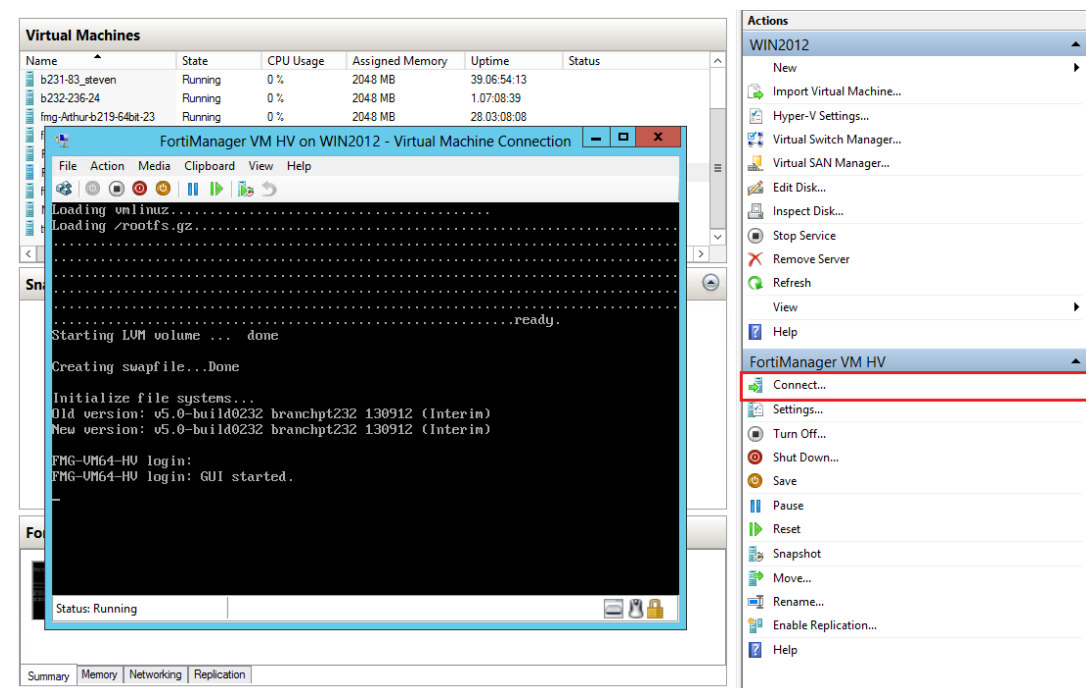
To enable Web-based Manager access to the FortiManager VM you must configure the port1 IP address and network mask of the FortiManager VM.

To configure the port1 IP address and netmask:

1. In the list of virtual machines, select the FortiManager VM that you deployed, right-click, and select Connect from the menu.

The *Console* window appears

Figure 33:FortiManager VM console access



2. At the FortiManager VM login prompt enter the user name `admin` and password. The default password is no password.
3. To configure the port1 IP address and netmask, enter the following CLI commands:

```
config system interface
  edit port1
    set ip <IP address Netmask>
  end
```



The port management interface should match the first network adapter and virtual switch that you have configured in the Microsoft Hyper-V Server virtual machine settings.



The Customer Service & Support portal currently does not support IPv6 for FortiManager VM license validation. You must specify an IPv4 address in both the support portal and the port management interface.

4. To configure the default gateway, enter the following CLI commands:

```
config system route
  edit 1
    set device port1
    set gateway <IP address Netmask>
  end
```

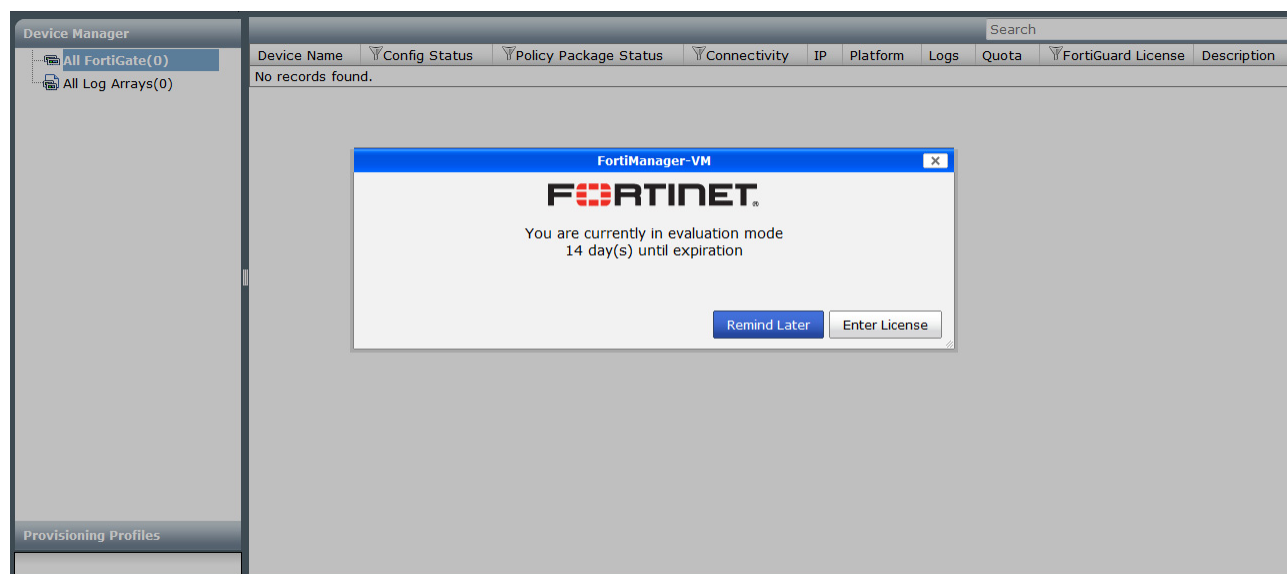
Connect to the FortiManager VM Web-based Manager

Once you have configured the port1 IP address and network mask, launch a web browser and enter the IP address you configured for the port management interface. At the login page, enter the user name `admin` and password and select *Login*. The default password is no password. The Web-based Manager will appear with an *Evaluation License* dialog box, see [Figure 34](#).



By default, the Web-based Manager is accessible via HTTPS.

Figure 34:Web-based Manager and Evaluation License dialog box



Upload the FortiManager VM license file

Every Fortinet VM includes a 15-day trial license. During this time the FortiManager VM operates in evaluation mode. Before using the FortiManager VM you must enter the license file that you downloaded from the [Customer Service & Support](#) portal upon registration.

To upload the FortiManager VM licence file:

1. In the *Evaluation License* dialog box, select *Enter License*. Optionally, select *Upload License* in the *License Information* dashboard widget.



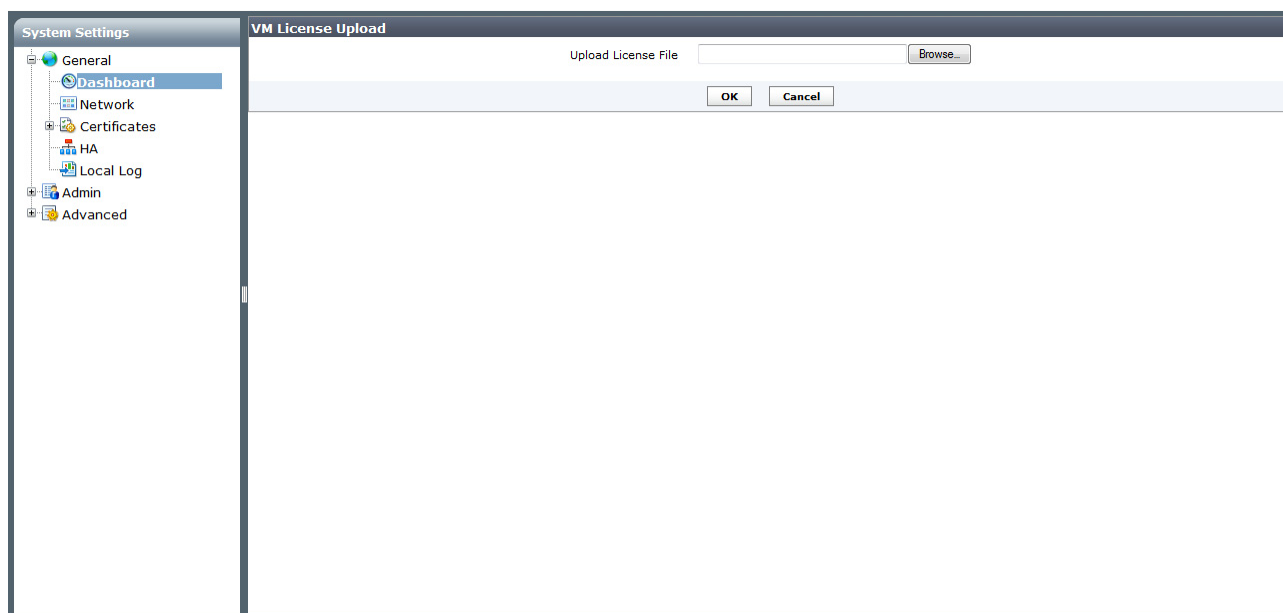
You can also upload the license file via the CLI using the following CLI command:

```
execute add-vm-license <vm license string>
```

You can open the FMG-VM.lic license file using Wordpad or Notepad++.

The license upload page opens.

Figure 35:License upload page



2. Select *Browse* and locate the license file (.lic) on your computer. Select *OK* to upload the license file.

You will receive a reboot message. The FortiManager VM system will reboot and load the license file.

3. Refresh the browser to login.
4. Enter `admin` in the Name field and select *Login*. The VM registration status appears as valid in the *License Information* widget once the license has been validated.



As a part of the license validation process FortiManager VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiManager's IP address has been changed, the FortiManager VM must be rebooted in order for the system to validate the change and operate with a valid license.

5. If the IP address in the license file and the IP address configured in the FortiManager VM do not match, you will receive the following error message dialog box when you log back into the VM.

Figure 36: VM license file is invalid dialog box



If this occurs, you will need to change the IP address in the [Customer Service & Support](#) portal to match the management IP and re-download the license file. To change the management IP address, see ["To edit the FortiManager VM IP address:"](#) on page 11.



After an invalid license file is loaded to FortiManager VM, the Web-based Manager will be locked until a valid license file is uploaded.

Configure your FortiManager VM

Once the FortiManager VM license has been validated you can begin to configure your device. For more information on configuring your FortiManager VM, see the [FortiManager Administration Guide](#) available at the [Fortinet Document Library](#).



In VM environments, it is recommended that you clone the VM instance. In the event of an issue with the firmware upgrade, you can to revert to the VM clone.

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